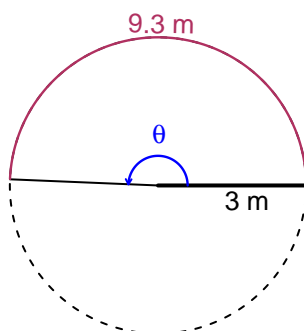# Trig Final (Practice v30)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 9.3 meters. The radius is 3 meters. What is the angle measure in radians?
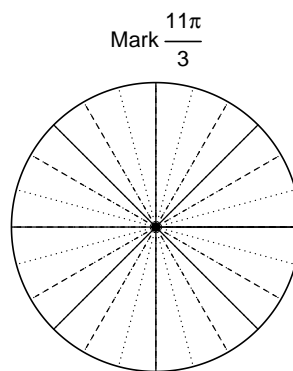

Question 2

Consider angles $\frac{-15\pi}{4}$ and $\frac{11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-15\pi}{4}\right)$ and $\cos\left(\frac{11\pi}{3}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-15\pi}{4}$

Mark $\dfrac{11\pi}{3}$

Find $\sin(-15\pi/4)$

Find $\cos(11\pi/3)$

Question 3

If $\sin(\theta) = \frac{-12}{13}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -6.1$ meters, an amplitude of 5.02 meters, and a frequency of 3.07 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).